REMARKS/ARGUMENTS

The claims are 14-23. Claim 21 has been amended to better define the invention and to incorporate subject matter previously appearing in claim 17, and claims 15-17 and 22 have been amended in view of the amendment to claim 21. Reconsideration is expressly requested.

Applicant would like to thank the Examiner for the courtesy of a telephone interview on November 8, 2007, the substance of which is set forth herein. In the Final Office Action, claim 22 was rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement as lacking support in the specification for the drive which has an piezo-actuator as claimed in claim 22. In addition, claims 14, 17, 18, 21 and 23 were rejected under 35 U.S.C. 102(b) as being anticipated by *Leys et al. U.S. Patent No. 3,735,702*, and the remaining claims were rejected under 35 U.S.C. 103(a) as being unpatentable over *Leys et al.* in view of *Kikuchi U.S. Patent No. 4,542,690* (claims 15, 16 and 20) or *Ehrhardt U.S. Patent No. 5,978,004* (claims 19 and 22). Essentially, the Examiner's

position was that *Leys et al.* discloses the device recited in the claims, except for features which were considered by the Examiner disclosed by the secondary references to *Kikuchi* and *Ehrhardt* or within the skill of the art.

During the interview, a proposed amendment to main claim 21 was discussed as set forth herein along with the prior art references and the rejection of claim 22 as being insufficiently supported. The Examiner indicated that Applicant should present its arguments in a formal response to the Office Action, and he would consider them.

With respect to the rejection of claim 22 under 35 U.S.C. 112, first paragraph, Applicant would like to point out that a drive having a piezo-actuator is described, *inter alia*, in the paragraph bridging pages 3-4 of the application as originally filed. Specifically, the paragraph bridging pages 3-4 states that "the drive by means of which the print head can be moved in the feed direction and counter to the feed direction of the band strip, has...a piezo-actuator." It is respectfully submitted that a person skilled in the art knows a piezo-actuator as well

as the operation of a piezo-actuator. In particular, one skilled in the art would know how to substitute a piezo-actuator for a slider crank mechanism based on the description in the paragraph bridging pages 3-4.

As set forth in 35 U.S.C. 112, the detailed description of the invention need only be in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. It is respectfully submitted that the disclosure at pages 3-4 of the specification that the drive by which the print head can be moved in the feed direction and counter to the feed direction has a piezo-actuator provides sufficient guidance to enable one skilled in the art to construct a device for printing as recited in claim 22 in which the first drive has a piezo-actuator. Upon reading the specification, one skilled in the art would know how to construct such a drive that makes use of a piezo-actuator. Accordingly, it is respectfully submitted that claim 22 fully complies with the requirements of 35 U.S.C. 112 and that the rejection on that basis should be withdrawn.

With regard to the rejection of the claims on the basis of the prior art, Applicant respectfully traverses that rejection on the basis of the following remarks.

As set forth in claim 21 as amended, Applicant's invention provides a device for printing at least one object moving at a supply speed in a feed direction. The device includes a thermal print head, means for supplying the at least one object to be printed to the thermal print head, a first drive for moving the thermal print head parallel to or counter to the feed direction of the at least one object to be printed, a second drive for moving the thermal print head onto the at least one object to be printed and away from the at least one object, and a control system for controlling the first drive and the second drive.

The first drive is controlled by the control system such that during movement of the thermal print head parallel to the feed direction of the at least one object, the thermal print head has a speed less than or equal to the speed of the at least one object being moved. The second drive is controlled by the control system such that during movement of the thermal print

head counter to the feed direction of the at least one object, the thermal print head is moved at a distance away from the at least one object.

In this way, Applicant's invention provides a device for printing at least one object moving at a supply speed in which the print head is automatically controlled to move in the feed direction at a speed less than or equal to the object being printed so that the supply speed of the object to be printed can be increased without the need to increase the maximum print speed of the print head.

The primary reference to *Leys et al.* discloses a device in which the thermal print head 17 is stationary in the directions parallel and counter to the feed direction of the sheet 16, except when manually adjusted by pulling a cam mechanism shown in FIG. 9, changing its angular position, and re-inserting its shaft 47 in the slot 38 in sub-frame 34 shown in FIG. 1.

Leys et al.'s thermal printer has thermal head 17 shown in FIG. 1 and a rotatable drum 15 for conveying a sheet 16 (from

stack 24) past the thermal head 17. The device has a first rotatable cam 46 shown in FIG. 6 and a reference surface 51 for adjusting the position of the thermal head with respect to the printing drum. The thermal head 17 of *Leys et al.* is mounted in a sub-frame 36 which is mounted in lid 13 so as to pivot about shaft 37. See FIG. 3. Sub-frame 36 fits on shaft 37 by means of an elongated bore or slot 38 which allows the position of the thermal head to be adjusted with respect to the printing drum 15 in the direction of arrow 39 in FIG. 1. The vertical position of thermal head 17 is controlled by a second rotatable cam 42 that engages legs 43 of sub-frame 36. See FIG. 2.

Leys et al. also has block 34 with electronic circuitry for controlling sheet movements, the printing head positions, and the dye ribbon transport. Presumably, electronics circuitry 34 controls the vertical position of the thermal head; however, the electronic circuitry does not control the first rotatable cam 46 (see FIG. 6) that allows adjustment in the direction of arrow 39 in FIG. 1.

FIG. 9 is a perspective view of the adjustment mechanism of

FIG. 6. See column 3, lines 52-53. The adjustment mechanism is a manually operated cam mechanism. See column 6, lines 41-43:

> "Adjustment occurs by pulling out the cam mechanism, changing its angular position, and re-inserting its shaft in the bore of the sub-frame."

When for a given the thermal head a cam position has been found that yields optimum results with respect to a given printing drum, this cam position and thus the position of the thermal head with respect to the printing drum would not be changed. See column 6, lines 14-21 of *Leys et al.*:

> "The adjustment which yields optimum results is in practice found on the basis of series of tests during which the adjustment of the thermal head is changed from the most rearward to the most forward position. The setting of the cam position which yields optimum results can then be marked on the head so that the head, as it has been removed for servicing of the apparatus, for remedying a paper jam, etc., can be replaced in exactly

the same position."

Thus, there is no disclosure or suggestion in *Leys et al.* of a first drive controlled by a control system such that during movement of the thermal head parallel to the feed direction of the at least one object to be printed, the thermal print head has a speed less than or equal to the supply speed of the at least one object being moved.

The defects and the deficiencies of the primary reference to *Leys et al.* are nowhere remedied by the secondary references to *Kikuchi* and *Ehrhardt*. *Kikuchi* was cited as teaching a slider-crank mechanism which drives a print head 5 against a platen or plate-shaped counter bearing 23 shown in FIGS. 1 and 2 of *Kikuchi*. There is no movement of the thermal print head parallel to or counter to the feed direction or a drive controlled by a control system for doing same. The motion of the print head in *Kikuchi* is up and down.

Similarly, *Ehrhardt*, which was cited as teaching a piezo-actuator 25 (see FIG. 3) that actuates a print head 7 (FIG. 1)

for printing on a label 5, shows a device on which the motion of the print head is again up and down, not parallel to or counter to the feed direction.

Thus, neither *Kikuchi* nor *Ehrhardt* discloses or suggests movement of the thermal print head parallel to or counter to the feed direction as recited in Applicant's claims.

Accordingly, it is respectfully submitted that claims 21 as amended together with claims 14-20 and 22-23, which depend directly or indirectly thereon, are patentable over the cited references.

In summary, claims 15-17 and 21-22 have been amended. In view of the foregoing, withdrawal of the final action and allowance of this application are respectfully requested.

Respectfully submitted,
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